

LIST OF CURRENT CLAIMS

1. (Original) A material comprising an intimate mixture of keratin protein and a water soluble polymer, the polymer selected from the group comprising:

- (a) poly (vinyl alcohol) (PVA) and
- (b) poly (vinyl pyrrolidone) (PVP).

2. (Original) A material according to claim 1 wherein the keratin protein is s-sulfonated.

3. (Original) A material according to claim 1 or claim 2 wherein the keratin protein is a keratin protein fraction.

4. (Original) A material according to claim 3 in which the keratin protein fraction is from the intermediate filament protein family.

5. (Currently Amended) A material according to claim 1 ~~any one of claims 1-4~~ in which the keratin protein is intact.

6. (Currently Amended) A material according to claim 1, ~~any preceding claim~~ in which the material is a film, fibre or membrane.

7. (Currently Amended) A method for making a material comprising

- (a) mixing a keratin protein and a water soluble polymer to form an intimate mixture, the polymer selected from the group comprising:
 - i. poly (vinyl alcohol) (PVA) and
 - ii. poly (vinyl pyrrolidone) (PVP)[[.]];
- (b) casting the aqueous mixture so produced; and
- (c) drying to create a material.

8. (Currently Amended) A method for making a material comprising:

- (a) mixing a keratin protein and a water soluble polymer to form an intimate mixture, the polymer selected from the group comprising
 - i. poly (vinyl alcohol) (PVA) and
 - ii. poly (vinyl pyrrolidone) (PVP); and
- (b) extruding the aqueous mixture produced from step (a) into a coagulation bath through a process of wet spinning.

9. (Currently Amended) A method for improving the physico-mechanical properties of the materials produced by claim 7, comprising ~~any one of claims 7-8~~ by introducing a cross-linker agent to form disulfide bonds and thus remove sulfonate functionalities.

10. (Original) A method according to claim 9 in which the cross-linking agent used as a reductant is a thiol or thioglycollate salt.

11. (Currently Amended) The method according to claim 9 ~~or claim 10~~ in which the physico-mechanical properties are wet and dry strength.

12. (Original) A method according to claim 10 in which the thioglycollate salt is ammonium thioglycollate solution.

13. (Currently Amended) The method according to claim 7 or 8 ~~any one of claims 7-12~~ wherein the keratin protein is s-sulfonated.

14. (Currently Amended) The method according to claim 7 or 8 ~~any one of claims 7-13~~ wherein the keratin protein is a protein fraction.

15. (Original) The method according to claim 14 wherein the keratin protein is from the intermediate filament protein family.

16. (Currently Amended) The method according to claim 7 or 8, wherein any one of claims 7-15 in which the keratin protein is intact.

17. (Currently Amended) A method of improving the wet strength properties of the materials produced by the method of claim 7 or 8, comprising any one of claims 7-8 by incorporating a cross-linking agent into them.

18. (Original) A method according to claim 17 in which the cross-linking agent is a protein in to the intimate mixture.

19. (Original) A method according to claim 17 in which the cross-linking agent is selected from the group consisting of formaldehyde and glutaraldehyde.

20. (Currently Amended) A process for improving the mechanical properties of a material produced by a method of claim 7 or 8, comprising any one of claims 7-8 by heat treating the composite matrix to enhance its crystalline properties.

21. (Original) A keratin protein derivative material in which the keratin is chemically linked to a monomer or a polymer material.

22. (Original).A keratin protein derivative according to claim 21 in which the keratin protein is s-sulfonated.

23. (Original) A keratin protein derivative according to claim 21 in which the keratin is a keratin protein fraction.

24. (Original) A keratin protein derivative according to claim 23 in which the keratin protein fraction is from the intermediate filament protein family.

25. (Currently Amended) A keratin protein derivative according to claim 21, wherein any one of claims 21-24 in which the keratin is intact.

26. (Currently Amended) A keratin protein derivative according to claim 21, ~~wherein any one of claims 21-25 in which~~ the monomer or polymer material is from the acrylate, epoxide or anhydride group.

27. (Currently Amended) A keratin homopolymer material made according to claim 21 ~~any one of claim 21-26~~ which is further polymerised.

28. (Original) A keratin material according to claim 27 in which has been further polymerised in the presence of an additional monomer from the acrylate, epoxide or anhydride group, to form a keratin copolymer material.